

Title	Cover & Contents
Author(s)	
Citation	数理解析研究所講究録別冊 = RIMS Kokyuroku Bessatsu (2009), B12
Issue Date	2009-08
URL	http://hdl.handle.net/2433/176800
Right	
Type	Others
Textversion	publisher

RIMS Kôkyûroku Bessatsu B 12

Algebraic Number Theory and Related Topics 2007

edited by Mamoru Asada, Hiroaki Nakamura and Hiroki Takahashi

August, 2009

**Research Institute for Mathematical Sciences
Kyoto University**

RIMS Kôkyûroku Bessatsu B12

*Algebraic Number Theory
and
Related Topics 2007*

edited by Mamoru Asada, Hiroaki Nakamura and Hiroki Takahashi

August, 2009

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

The papers presented in this volume of RIMS Kôkyûroku Bessatsu are in final form and refereed.
©2009 by the Research Institute for Mathematical Sciences, Kyoto University. All rights reserved.
Printed in Japan.

PREFACE

This volume of Kôkyûroku Bessatsu is the proceedings of the symposium “Algebraic Number Theory and Related Topics”, which was held at the Research Institute for Mathematical Sciences (RIMS) of Kyoto University from December 10 through December 14, 2007. There were given 22 lectures at the symposium and this volume collects 17 contributions from the speakers. They are all refereed and are in final form.

The symposium was organized by Hiroaki NAKAMURA, Hiroki TAKAHASHI and myself, who have also edited this proceedings.

We would like to express our sincere gratitude to all speakers, the participants of the symposium and the referees.

Finally, we would also like to thank the staffs of RIMS for their support, and Professor Akio TAMAGAWA for many pieces of valuable advice about the symposium and the proceedings.

the chief editor
Mamoru ASADA

PROGRAM

Algebraic Number Theory and Related Topics

Date: December 10–14, 2007

Place: Room 420, RIMS, Kyoto University

Organizers: Mamoru Asada (Kyoto Institute of Technology)

Hiroaki Nakamura (Okayama University)

December 10, Monday

- 10:00–10:50 Akio Tamagawa (Kyoto University, RIMS)
Torsion of abelian schemes and rational points on moduli spaces
(joint work with Anna Cadoret)
- 11:10–12:00 Shinya Harada (Kyushu University)
Smallness of fundamental groups for arithmetic schemes
(joint work with Toshiro Hiranouchi)
- 13:30–14:20 Kentaro Nakamura (University of Tokyo)
Classification of two dimensional trianguline representations
- 14:40–15:40 Kenichi Bannai (Nagoya University)
 p -adic elliptic polylogarithm and the two-variable p -adic L -function
for CM elliptic curves
- 16:10–17:00 Tomoyuki Abe (University of Tokyo)
Comparison between Swan conductors and characteristic cycles

December 11, Tuesday

- 10:00–10:50 Yoichi Mieda (University of Tokyo)
Cycle classes, Lefschetz trace formula and integrality for p -adic cohomology
- 11:10–12:00 Atsushi Shiho (University of Tokyo)
On the overconvergence of relative rigid cohomology
- 13:30–14:20 Mohamed Saïdi (University of Exeter)
A survey on the anabelian geometry of hyperbolic curves over finite fields

- 14:40–15:40 Alexander Schmidt (University of Regensburg)
Rings of integers of type $K(\pi, 1)$
- 16:10–17:00 Christopher Rasmussen (Kyoto University, RIMS)
A finiteness result for abelian varieties with constrained prime power torsion

December 12, Wednesday

- 10:00–10:50 Noriyuki Suwa (Chuo University)
Around Kummer theories
- 11:10–12:00 Youichi Koyama (Kanazawa Institute of Technology),
Ken-ichi Yoshino (Kanazawa Medical University)
On the prime divisors of the class numbers of the real p^r th cyclotomic fields

December 13, Thursday

- 10:00–10:50 Tsuyoshi Itoh (Ritsumeikan University)
Unramified extensions and geometric \mathbf{Z}_p -extensions of global function fields
- 11:10–12:00 Masanori Asakura (Kyushu University)
Local units are generated by certain cyclotomic units
- 13:30–14:20 Takahiro Tsushima (University of Tokyo)
The localization of the characteristic class of an l -adic sheaf and the conductor formula
- 14:40–15:40 Yasuo Motoda (Yatsushiro National College of Technology),
Toru Nakahara, Tsuyoshi Uehara (Saga University),
Syed Inayat Ali Shah (University of Peshawar)
On a problem of Hasse
- 16:10–17:00 Toru Komatsu (Sophia University)
Construction of cyclic number fields with prime degree and their Frobenius automorphisms

December 14, Friday

- 10:00–10:50 Yasuhiro Kishi (Fukuoka University of Education)
An infinite family of imaginary quadratic fields with class number
divisible by 5
- 11:10–12:00 Akinari Hoshi (Waseda University)
A geometric framework for the subfield problem of generic polyno-
mials via Tschirnhausen transformation
(joint work with Katsuya Miyake)
- 13:30–14:20 Hidetaka Kitayama (Osaka University)
Inverse Galois problem for an extension of $PSp(2, F_3)$
- 14:40–15:40 Hironori Shiga (Chiba University)
Arithmetic-Geometric means and some related theories
- 16:10–17:00 Ki-ichiro Hashimoto, Yukiko Sakai (Waseda University)
On generic family of genus 2 curves with $\sqrt{2}$ -multiplication

Program committee members: Mamoru Asada, Hiroaki Nakamura,
Hiroki Takahashi (University of Tokushima)

CONTENTS

PREFACE	1
PROGRAM	2
ARTICLES	
Torsion of abelian schemes and rational points on moduli spaces Anna CADORET and Akio TAMAGAWA	7
Smallness of fundamental groups for arithmetic schemes: a resume (joint work with Toshiro Hiranouchi) Shinya HARADA	31
Realizations of the elliptic polylogarithm for CM elliptic curves Kenichi BANNAI, Shinichi KOBAYASHI and Takeshi TSUJI	33
ℓ 進層のSwan 導手と unit-root overconvergent F -isocrystal の特性サイクル について (On the Swan conductors for smooth ℓ -adic sheaves and the characteristic cycles for unit-root overconvergent F -isocrystals) 阿部 知行 (Tomoyuki ABE)	51
Cycle classes, Lefschetz trace formula and integrality for p -adic cohomology Yoichi MIEDA	57
On the anabelian geometry of hyperbolic curves over finite fields Mohamed SAÏDI and Akio TAMAGAWA	67
On the $K(\pi, 1)$ -property for rings of integers in the mixed case Alexander SCHMIDT	91
On elliptic curves of conductor 11^2 and an open question of Ihara Christopher RASMUSSEN	101
Around Kummer theories Noriyuki SUWA	115

Prime divisors of the class number of the real p^r th cyclotomic field and characteristic polynomials attached to them Youichi KOYAMA and Ken-ichi YOSHINO	149
Unramified extensions and geometric \mathbb{Z}_p -extensions of global function fields Tsuyoshi ITOH	173
Local units are generated by certain cyclotomic units Masanori ASAKURA	183
On localizations of the characteristic classes of ℓ -adic sheaves of rank 1 Takahiro TSUSHIMA	193
On a problem of Hasse Yasuo MOTODA, Toru NAKAHARA, Syed Inayat Ali SHAH and Tsuyoshi UEHARA	209
Construction of cyclic number fields with prime degree and their Frobenius automorphisms Toru KOMATSU	223
On the field intersection problem of generic polynomials: a survey Akinari HOSHI and Katsuya MIYAKE	231
On a versal family of curves of genus two with $\sqrt{2}$ -multiplication Kiichiro HASHIMOTO and Yukiko SAKAI	249